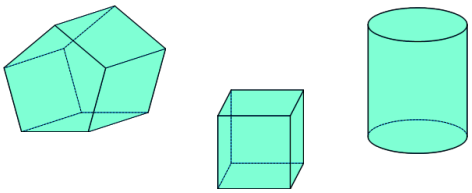
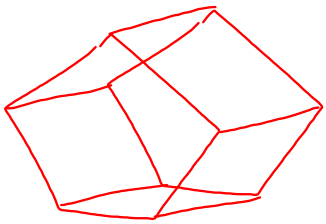
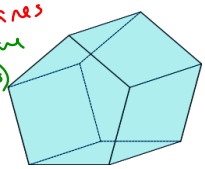
Prisms and Cylinders

12-2
12-4



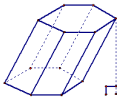


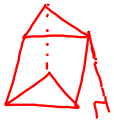
bases ≅ polygons in parallel planes
lateral faces faces that are not bases (parallelograms)
lateral edges
altitudes (distance from base to base)



right prism
- each lateral edge is ⊥ to both bases

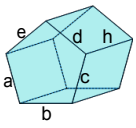
oblique prism
- lateral edges NOT ⊥ to bases





Lateral Area--(L) or (LA)--sum of the areas of the lateral faces

Surface Area--(S) or (SA)--sum of the areas of all of the faces



LA = $ah + bh + ch + dh + eh$

$h(a+b+c+d+e)$

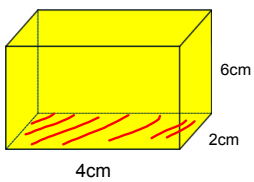
$LA = ph$ (p)

LA = ph p = perimeter of base

SA = LA + 2B B = area of the Base

V = Bh

ex 1:



p = 12cm $(4+2+4+2)$

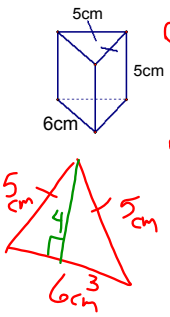
B = $8cm^2$ $(4 \cdot 2)$

LA = $12 \cdot 6 = 72cm^2$

SA = $72 + 2(8)$
$88cm^2$

V = $8 \cdot 6 = 48cm^3$

ex 2:



Base

Prism

p= 16 cm

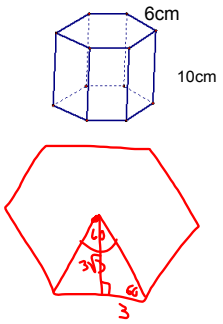
B = $\frac{1}{2}$ 4·6 = 12 cm²

LA = 16·5 = 80 cm²

SA = 80 + 24 = 104 cm²

V = 12·5 = 60 cm³

ex 3: Base is regular.



p= 36 cm

B = $\frac{1}{2}3\sqrt{3}\cdot 36$

$54\sqrt{3} \approx 93.5$ cm²

LA = 36·10 = 360 cm²

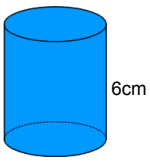
SA = 360 + 2(54√3)

547.1 cm²

V = $54\sqrt{3}\cdot 10 = 540\sqrt{3}$

≈935.3 cm³

ex 4:



r = 4cm

C = $2\pi 4 = 8\pi$ cm

B = 16π cm²

LA = $8\pi \cdot 6 = 48\pi$ cm²

SA = $48\pi + 2(16\pi)$

80π cm²

V = 96π cm³

ex 5: Work backwards.

Cylinder
V = 768π u³
h = 12 units

$V = \pi r^2 \cdot h$

$768\pi = \pi r^2 12$

$64 = r^2$

$8 = r$

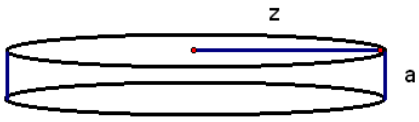
r = 8 u

C = 16π u

LA = $16\pi \cdot 12 = 192\pi$ u²

SA = $192\pi + 2(64\pi) = 320\pi$ u²

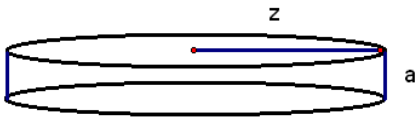
Find the volume of a cylinder with a radius of z and a height of a.



$V = Bh$

$\pi z^2 \cdot a$

Find the volume of a cylinder with a radius of z and a height of a.



$V = \pi z^2 a$

= pi zz a

HW
p806-809
#s 3, 4, 6-8, 14, 28a
p823
#s 6, 7, 11, 18